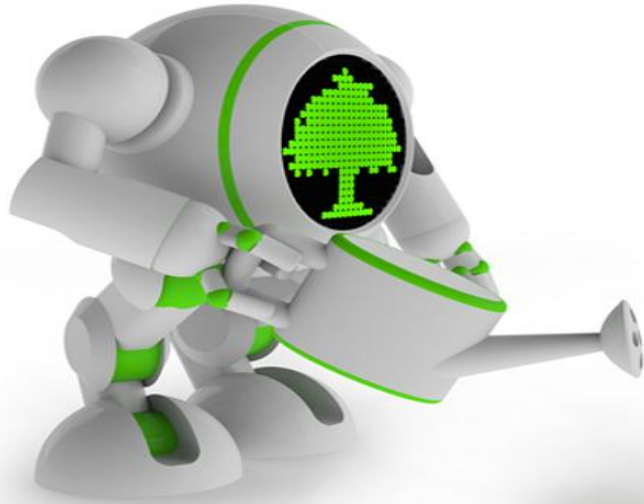


LAIA's Rooftop Garden RoboticsTM



Baltimore, MD

Lab for Artificial Intelligence and its Applications (L.A.I.A.)

Coppin State University

PI: Leshell Hatley, PhD

JUXTOPIA



Collaborative Research & Development Project

LAIA



**The Lab for Artificial Intelligence
and its Applications
(LAIA) @ Coppin State University**

&



The Juxtopia Group

Outline: Rooftop Garden Robotics

The Issue: Food Deserts Shamsuddin Khan

Our Solution: Shamsuddin Khan

Robot, Drone, App: Gabriel Franca

Design Challenges: Jerry Mahammitt

Design Solutions: Jerry Mahammitt

White House HBCU Maker & Innovation Challenge: Dr. Leshell Hatley

Demonstration and Q & A: All



Rooftop Garden Robotics

Issue: Food Deserts

- Almost every big city has food desert(s).
- Locations with limited access to healthy affordable food.
- A city usually doesn't have enough vacant space for gardening.



Rooftop Garden Robotics

BALTIMORE DEMOGRAPHICS AS OF 2012

Source: 2010 Census Data and the Department of Planning



1 in 5 Baltimore City residents live in food deserts, or 125,000 people



Nearly 1 in 4 of Baltimore's school aged children (0-17) live in a food desert, or 31,000 children



1 in 4 of Baltimore's African American population lives in a food desert.



1 in 4 households, or 13,000 households receive Supplemental Nutrition Assistance Program (SNAP) benefits, twice the percentage of non-food desert households.



1 in 3 of Baltimore's neighborhoods, or 36 percent, are located within a food desert.

Our Solution: Rooftop Garden Robotics

Rooftop Garden Robotics:

- **It's a Garden on the Roof**
Rooftops are nice choices for fruits and vegetables.
- **Robots** take care of the garden completely (**Artificial Intelligence**).
- **Drones** carry the food from the roof to the ground.

Addresses the lack of space for gardens in cities.

Also suitable for the elderly and the disabled.

Design of the Robots

- Robots will have sensors to determine different factors.
- Red sensor to detect ripen tomatoes.
- Green sensor to detect green vegetables.
- Humidity sensor to decide whether it's necessary to water.



The design of our drone

- Design a different drone
- The job of our drone
- The drone has to support large weight



Communication Between All

- Development of mobile and web app
 - Enable communication between all



The Challenge

- Sensors blinded by obstructions (i.e. bird poop, dirt, wind).
- Robots knowing when to take shelter in rough weather.
- Drainage system for the rain water.
- Protection from Animals (squirrels, birds etc...)

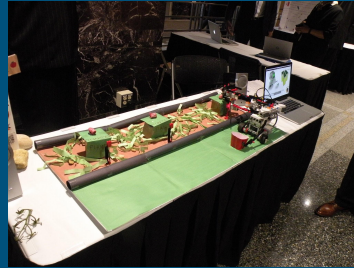
DESIGN
CHALLENGE

Design of the Garden

- **Shelter** from animals and weather
- **Pathways** to allow for the robot movement



WHITE HOUSE HBCU/TCU Maker & Innovation Challenge, June 2016

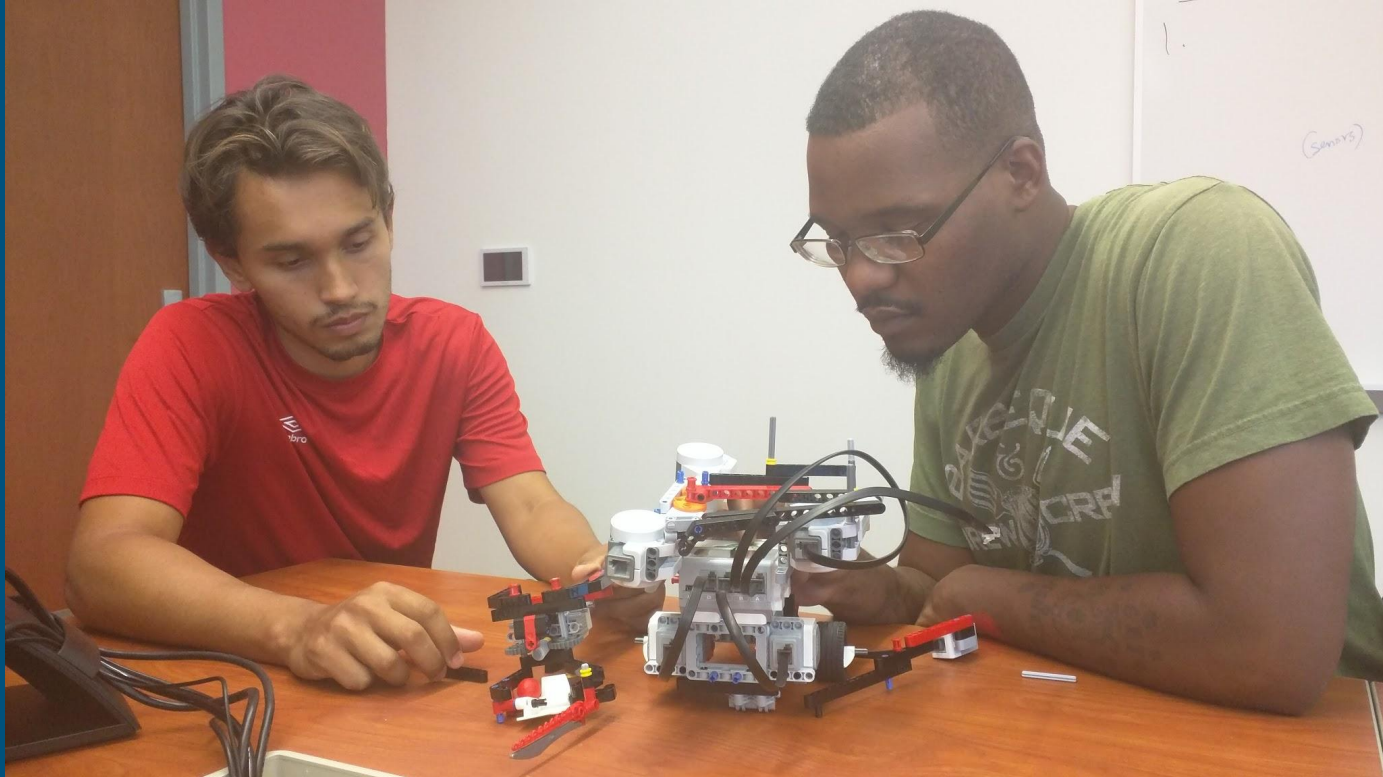


Video



<https://www.youtube.com/watch?v=4UGpREMkJfg>

Demonstration



Thank You!

Questions?

Contact:

<http://www.laia-csu.org>

@laia_csu

